



STATE OF UTAH
NATURAL RESOURCES
Oil, Gas & Mining

Scott M. Matheson, Governor
Temple A. Reynolds, Executive Director
Dianne R. Nielson, Ph.D., Division Director

4241 State Office Building • Salt Lake City, UT 84114 • 801-533-5771

January 11, 1985

CERTIFIED RETURN RECEIPT REQUESTED
(P402 457 093)

Mr. Wendell J. Owen
Co-op Mining Company
P. O. Box 1245
Huntington, Utah 84528

Dear Mr. Owen:

RE: Technical Deficiency Document, Co-op Mining Company, Bear
Canyon Mine, ACT/015/025, #2, Emery County, Utah

The Division has completed its technical adequacy review of the above-referenced Mining and Reclamation Plan. In order to prepare a draft Technical Analysis (TA), several technical deficiencies identified during the review must be addressed by the applicant. These technical deficiencies have been detailed in the enclosed document. It is suggested that you review the deficiencies and contact the Division as soon as possible should you desire to meet with the staff to discuss and/or clarify what is needed to correct these deficiencies.

The Division has scheduled March 1, 1985 for completed preparation of the draft TA. In order to accomplish this goal, it will be necessary for your complete response to these deficiencies to be received by the Division no later than February 8, 1985. Should you have any questions, please contact the Division at your earliest convenience.

Sincerely,

Mary M. Boucek
Mary M. Boucek
Permit Supervisor/
Reclamation Biologist

btb

Enclosure

cc: Dianne Nielson
Ron Daniels
Joe Helfrich
A Team

8813R-38

TECHNICAL DEFICIENCIES

Co-op Mining Company
Bear Creek Canyon Mine
ACT/015/025, Emery County, Utah

January 11, 1985

UMc 782.13 Identification of Interests

(a)(6) The telephone number for the resident agency must be submitted.

(e) The applicant needs to submit the addresses for Nevada Electric and the U. S. Forest Service.

UMc 782.14 Compliance Information

The applicant must submit information for both Trail Canyon and Bear Creek Canyon that fulfills this section.

UMC 784.12 Operation Plan: Existing Structures

The applicant must submit plans for existing structures (see existing structures under the Definitions section).

UMC 784.20 Subsidence Control Plan

The applicant must provide a detailed description of the methodology used to monitor subsidence.

UMC 817.14 Casing and Sealing of Exposed Underground Openings: Temporary

Applicant must provide information about temporary seals for ground water monitoring wells as required by UMC 817.14(b).

UMC 817.22 Topsoil: Removal

(e) There is still a disagreement on the volume of soil needed to reclaim the total surface disturbance. The 10 acres of disturbance would require approximately 8,100 yd³ to cover the area with six inches of soil. If there is 2,600 presently stockpiled, that makes a difference of approximately 5,500 yd³.

The applicant has identified several sources to obtain the needed soil material, but has not provided the volume available from each source, a table that lists the volume of material available from each source and the total available material must be submitted.

The total must be equal or greater than the 8,100 yd³ needed for reclamation.

The applicant claims soil material will be available from the shop and bathhouse. To the best of the Division's knowledge, the earth work for these facilities has been completed. The applicant must submit the area where this soil material has been stockpiled along with the volume of material stockpiled.

UMC 817.23 Topsoil: Storage

All topsoil and substitute material must be stored within the permit area. Therefore, the applicant must submit a plan for storage of the substitute material on-site.

Plate 8-2 in the mine plan does not support the claim of 2,600 yd³ of topsoil stockpiled on site. The Plate must be redone to scale.

UMC 817.24 Topsoil: Redistribution

The applicant uses the word "suitable" many times throughout the topsoil redistribution plan; "suitable" depth, "suitable" time period. The term must be defined and the exact information placed into the text.

Phrases like "by using appropriate equipment running at a suitable depth," "will employ the necessary measures," "might" and "travel on the reclaimed area will be limited" need to have specific plans submitted. What is appropriate equipment running at a suitable depth?

UMC 817.41 Hydrologic Balance: General Requirements

The applicant must address the water quality of unplanned portal discharges and, if necessary, discuss portal discharge mitigation.

UMC 817.45 Sediment Control Measures

The applicant has indicated energy dissipating devices for Culverts C-8U and C-1D in the Table, Summary of Culvert Sizes. Devices of this nature must be shown in cross-sections as well as discussed in the text, concerning location and maintenance. After a complete analysis of the disturbed and undisturbed area ditches and culverts, the Division discovered a basic flaw in the analysis of flows and velocities. The computer program used by Mr. Wimmer was only able to use a Basin Lag value of greater than or equal to .25 hours. As shown in the Soil Conservation Service's National Engineering Handbook, Chapter 15, page 14, Basin Lag is divided by .6 to arrive at a Time of Concentration value needed to compute peak flow. Therefore, a Basin Lag value of .25 hours equates to a value of .417 hours for a Time of Concentration. The Division took the

Hydraulic Length given in the mine plan and slopes for each sub-basin and computed more accurate Time of Concentration values. These values reflected much higher peak flows and velocities. A revised summary table of ditch sizes and revised culvert headwater calculations based on new flows is shown below. The values for peak flows were determined using a peak flow model developed by Utah State University. The culvert headwater depths were determined using revised peak flows from this peak flow model and a nomograph from the U. S. Steel Handbook of Steel Drainage and Highway Construction Products, page 189, labeled Headwater Depth for Corrugated Steel Pipe Culverts with Inlet Control. See "Revised Summary of Ditch Sizes" table below.

A comparison of the values in the mine plan and the revised ditch size table generated by the Division shows that the ditches are adequately designed, but that velocities will be greater than shown in the mine plan. Therefore, revised riprap sizes were generated using the same nomograph included in the mine plan. The applicant is required to commit to these changes and include them as part of their mine plan or it will be stipulated in the Final Technical Analysis.

The same process of checking headwater depths on culverts was carried out by the Division on the revised peak flows given in Revised Summary of Culvert Sizes. It was found, as is shown in the Table, that based on the assumption of inlet control, the revised peak flows generated greater headwater depths. The applicant shall now demonstrate that the revised headwater depths are indeed found on site or the applicant must commit to larger culverts or bigger headwalls in certain critical locations. See below the Revised Summary of Culvert Sizes and required headwater depths.

In summary, the following items must be addressed by the applicant.

1. Revised peak flow values must be used to accurately delineate riprap sizes, ditch velocities and culvert outlet velocities.
2. If energy dissipators are to be used, the type and location is to be shown on Plate 7-1, including a generalized cross-section.
3. Based on revised peak flow values generated by an accurate Time of Concentration values, revised culvert headwater depths must be verified by a field site inspection. NOTE: the flow given in the MRP culvert size table for culvert C-3R is possibly wrong. Shouldn't it be 10.4 vs. 16.4?

REVISED SUMMARY OF DITCH SIZES

Ditch	Adjusted Flow (cfs)	Velocity (fps)	Adjusted Riprap Sizes	Slope (%)	Depth of Ditch (ft)	Depth of Water (ft)
D-1R	13.3	7.4	8"	6.0	1.94	1.34
D-2R	16.22	7.7	8"	6.0	2.04	1.44
D-3R	14.76	7.6	8"	6.0	1.69	1.39
D-7u	2.3	4.1	NA	4.0	1.36	.75
D-2u	2.24	4.4	NA	5.0	1.31	.71
D-3u	8.1	6.1	5"	5.0	1.75	1.15
D-4u	15.14	7.2	5"	5.0	2.06	1.46
D-5u	1.46	4.51	NA	7.0	1.169	.569
D-6u	1.46	4.51	NA	7.0	1.169	.569
D-7u	13.2	6.89	6.5"	5.0	1.981	1.381
D-8u	3.3	5.3	4.0"	6.25	1.385	.785
D-9u	2.6	5.6	4.5"	8.3	1.287	.687
D-10u	2.3	7.22	7.5"	18.0	1.17	.57
D-11u	9.97	9.45	13.0"	14.0	1.63	1.03
D-1D	1.5	5.0	3.5"	9.0	1.15	.55
D-2D	2.24	5.74	4.5"	10.0	1.22	.62
D-3D	1.28	5.8	4.7"	15.0	1.07	.47
D-4D	6.23	6.2	5.5"	6.25	1.6	1.0
D-5D	9.17	6.9	7.0"	6.4	1.8	1.2
D-6D	1.62	4.4	NA	6.25	1.2	.6

REVISED SUMMARY OF CULVERT SIZES

	Adjusted Flow (cfs)	Slope (%)	Diameter	Required Headwater From Bottom of Culvert	HW/D	HW=(HW/D)XD	Adjusted Required Headwater Above Top Of Culvert
C-1R	13.3	8.0	18"	27"	2.62	3.93	29"
C-2R	16.22	8.0	18"	36"	3.65	5.5	48"
C-3R	14.76	8.0	18"	27"	3.2	4.8	40"
C-1U	11.4	15.0	30"	18"	.66	1.65	NA
C-2u	2.24	15.0	15"	9"	.70	.88	NA
C-3u	10.06	5.0	12"	36"	6.0+	6.0+	60"+
C-4U	8.12	5.1	10"	36"	6.0+	6.0+	60"+
C-5u	8.12	4.8	10"	36"	6.0+	6.0+	60"+
C-6u	1.46	3.7	10"	12"	1.3	1.1	3.2"
C-7u	13.15	8.3	12"-18"	27"	2.6	3.9	28"
C-8u	11.4	15.0	18"	24"	1.92	2.9	16.8"
C-9u	2.3	7.3	15"	9"	.725	.83	NA
C-1D	2.24	20.0	15"	9"	.725	.83	NA
C-2D	6.23	12.0	18"	15"	1.05	1.6	1.2"
C-3D	1.52	4.2	12"	9"	.825	.825	NA

4. In undisturbed area ditches where riprap placement is needed, a filter blanket must be implemented and properly sized. Site field verification of location for riprap and filter blanket placement must be coordinated with the regulatory authority, in order to ascertain field verification based on engineering calculation predictions. Ditch D-4U should be looked at closely.
4. Revised culvert exit velocities based on new peak flow values must be used to size riprap aprons at the outlets of culverts. The outlets of Culverts C-9U, C-2D and C-1D should be looked at closely.
5. Routing of discharges from the pond outlet to the Bear Canyon stream channel or the main sediment pond are not shown or addressed in the MRP. This should be portrayed on the appropriate plate in the MRP and the configuration of this channel supported by calculations contained in the MRP.

UMC 817.49 Impoundments

The applicant must discuss the following subsections in the narrative portion of the Hydrology section.

(e) All embankments of temporary impoundments, the surrounding areas and diversion ditches, disturbed or created by construction, shall be graded, fertilized, seeded and mulched to comply with the requirements of UMC 817.111-.117 immediately after the embankment is complete, provided that the active, upstream face of the embankment where water will be impounded may be riprapped or otherwise stabilized. Areas in which the vegetation is not successful or where rills and gullies develop shall be repaired and revegetated to comply with the requirements of UMC 817.111-.117.

This subsection of regulation UMC 817.49 is self-explanatory and must be addressed in the mine plan in narrative form.

(g) All dams and embankments shall be routinely maintained during the mining operation. Vegetative growth shall be cut where necessary to facilitate inspection and repairs. Ditches and spillways shall be cleaned. Any combustible materials present on the surface, other than material such as mulch or dry vegetation used for surface stability, shall be removed and all other appropriate maintenance procedures followed.

This subsection of regulation UMC 817.49 is self-explanatory and must be addressed in narrative form in the mine plan.

UMC 817.50 Hydrologic Balance: Underground Mine Entry and Access Discharges

The applicant must address potential mine flooding and associated build-up of hydraulic head and unplanned gravity discharges of water as required by UMC 817.50.

UMC 817.52 Hydrologic Balance: Surface and Ground Water Monitoring

(a) Findings generated by the Regional Aquifer and Ground Water Study must be incorporated into the Mining and Reclamation Plan (MRP) to satisfy UMC 817.52(a).

The applicant received a letter from the Division sent November 30, 1984 requesting adequate baseline data regarding surface and ground water monitoring (i.e., mine inflow and borehole). This information has not yet been received as requested in our letter. It should be noted that samples taken in field should be sent to the lab within seven days in most cases, the exceptions being acidity, alkalinity and oil and grease, which must be received within 24 hours for accurate analysis.

UMC 817.57 Stream Buffer Zones

The applicant needs to address the requirements of this regulation by proposing specific protection measures for preventing mining impacts to Bear Creek. The information in the plan does not address this requirement specifically. Appropriate measures must be proposed including substantially sized berms, fences or other measures to avoid disturbed drainage, machinery, waste and other items from entering the stream channel.

UMC 817.61-.68 Use of Explosives

The MRP states that blasting operations may occur. Accordingly, the applicant must specifically identify the explosive regulations that will be followed.

UMC 817.71-.74 Disposal of Underground Development Waste and Excess Spoil and Nonacid and Nontoxic-forming Coal Processing

It is assumed that the applicant disposes of underground development waste underground. This assumption, however, must be clarified and stated in the MRP.

UMC 817.89 Disposal of Noncoal Waste

The plan for the noncoal storage area must be submitted (see page 3-74, MRP).

UMC 617.97 Fish and Wildlife Information

(b) A commitment must be made to promptly report to the Division the presence in the permit area of any critical habitat of a threatened or endangered plant or animal species, or any bald or golden eagle, of which the operator becomes aware and which was not previously reported to the Division.

(d)(9)(ii) Present plans which show how plants will be grouped and distributed to optimize edge effect, cover and other benefits for fish and wildlife for each vegetation type to be reclaimed.

The MRP has addressed measures to protect raptor nests from escarpment failure due to subsidence. However, the possibility of failure still remains. Therefore, a commitment to mitigate the loss of or damage to nests caused by subsidence is needed.

Describe mitigation measures to be implemented if any seeps or springs are adversely affected by mining operations (including subsidence).

A more detailed description of storage facilities for oil, grease and other possible contaminants is needed. Include a discussion of the ability of the storage plan to prevent contamination of the site, particularly Bear Canyon Creek and Huntington Creek. Spillage from fuel storage areas that could enter the sediment pond still has the potential to impact aquatic environments on or adjacent to the mine plan area. Also, oil on a sediment pond, even for a short length of time, has potential to negatively impact avifauna. These issues must be addressed.

The Table of Contents for Chapter 10 lists several topics to be discussed under Section 10.5 and 10.7. However, most of the topics are not addressed in the text. This should be done.

It is stated that all water within the permit area is ephemeral. This is not correct according to information in Chapter 7. Bear Creek is considered to be intermittent. Chapter 10 should be updated to better characterize this stream. In addition, if subsidence may effect Trail Creek, a more detailed description of this stream is needed. In particular, Section 10.7, paragraph 2, discusses baseline information which will be collected and correlated with water quality and hydrology measurements. A more thorough discussion of this must also be provided.

The Utah Division of Wildlife Resources (DWR) has provided the following comments on the MRP. These comments should be addressed by the applicant:

Pages 3-15 and 3-16 - Sections 3.4.2 and 3.4.2.3. These sections are inconsistent in regard to barrier pillar sizes that will be left for protection of rock outcrops that provide potential habitat for nesting raptors.

Page 3-27 - Section 3.4.6.3 - Acid Forming. What toxic materials will be stored? Will they be appropriately safeguarded such that they do not contaminate the environment or become available for ingestion or other damage to wildlife?

Pages 3-59 and 3-60 - Section 3.5.6.1 - Mammals. All of the surface disturbed area at the minesite (10 acres) represents critical valued winter range for mule deer. Therefore, impacts to mule deer due to loss of this habitat throughout the life of the mine are considered to be of significance. The MRP should propose mitigation for such.

Page 4-15, Section 4.5.1 - Wind Protection Barriers. The rock pile will not benefit wildlife. There is ample cover in the immediate area. The space to be occupied by the rock would be more valuable if planted so that it would produce forage for wildlife.

Although the MRP has been substantially improved since the Division reviewed it January 6, 1984, Chapter 10 remains technically deficient and needing substantial literary review. For example, Table 10-1 is missing; Table 10-4 is presented on pages 10-10 and 10-13; Table 10-5 is presented on pages 10-11 and 10-12; Table 10-3 is presented after Table 10-4 and 5 (pages 10-10 through 10-13) on page 10-17, rather than in its appropriate order following Table 10-2.

The numeration of species having potential to inhabit the mine plan area as presented by the applicant is in disagreement with the data provided by the Division to the applicant on May 22, 1981. The needed identification of species to the applicant was provided by the DWR, the state's wildlife authority. It is not understandable why that information has not been utilized by the applicant, since information they have secured from an unidentified source is of lesser quality. As an example, the Division has identified 239 species of vertebrate wildlife having potential to inhabit the mine plan and adjacent (Huntington Creek) area - 5 fish, 6 amphibians, 17 reptiles, 136 avifauna and 75 mammals. The MRP suggests that 235 species - no fish, 3 amphibians, 12 reptiles 136 avian and 84 mammalian - inhabit the mine plan area. If the applicant wishes to challenge the Division's position, appropriate justification for their difference of opinion needs to be presented. Using amphibians to further the example, the applicant identifies the western spadefoot toad as being present on the mine plan area. This species (Scaphiopus hammondi) has only been identified in southeastern Utah

from Grand and San Juan counties. The Great Basin spadefoot toad (*Scaphiopus intermontanus*) is the only "spadefoot" from the family pelobatidae having potential to inhabit the mine plan area.

Page 10-5 - Birds. The MRP fails to address most of the high interest avifauna - 25 species having potential to inhabit the mine plan area area of high interest.

Page 10-20 - Reptiles and Amphibians. The Utah milk snake, Utah mountain king snake and tiger salamander all have potential to inhabit the mine plan area. Each represents a high interest species to the state of Utah. However, the applicant has only identified the king snake (Table 10-5) as having potential to inhabit the mine plan area. Note that the applicant failed to recognize that this species is of high interest. This information was provided to the applicant January 6, 1984.

UMC 817.101 Backfilling and Grading

(b)(8) The retention of the highwalls must be shown on Plate 3-2. This must be clearly detailed as well as the reasons why they will be retained.

(b)(5)(ii) The applicant must show how the backfilled slopes will achieve a static safety factor of 1.3.

UMC 817.111-.117 Revegetation

The applicant has elected to establish reference areas for the pinyon-juniper-grass and riparian vegetation types. However, the reference areas as described in Appendix 9-A are not of adequate size and are subject to disturbance due to their proximity to an existing road. The pinyon-juniper-grass reference area is approximately .38 acres in size and the riparian reference area is .09 acres. The Division recommends a reference area of at least one acre for each vegetation type to be reestablished. The applicant must, therefore, establish reference areas of adequate size on the permit area.

If reference areas of adequate size cannot be found for each vegetation type, it is suggested that the Range Site Method be used. This would permit the sampling of suitable areas off site to set success standards. These areas would not have to be permanently protected. The Range Site Method is described in the Division's vegetation sampling guidelines which have been provided to the applicant. All sampling methods to be used must be approved by the Division.

Though the reference areas are not considered adequate for establishing success standards, the information collected from sampling them is useful in evaluating the proposed revegetation plan. The following comments apply to that portion of the plan.

Plans to reestablish pinyon and juniper (page 9-24) on the reclaimed area should be deleted. These species are not considered to be beneficial to postmining land-uses.

Forb species included in the riparian seed mixture (page 9-22) are not commercially available. Substitution of suitable forb species that are commercially available is advised.

The application rates of both seed mixtures (pages 9-22 and 9-23) proposed for final reclamation should be adjusted to provide approximately 20-30 pure live seeds/ft² (drill seeded).

Including Bromus tectorum (cheatgrass) in the riparian area seed mixture is unacceptable. It should be replaced by a suitable species.

It is mentioned that irrigation will be used if needed. Describe how the need for irrigation will be determined and give plans for implementation.

A woody plant density standard of one plant per one m² interval has been proposed (pages 3-104 and 9-19). The standard must be based on results obtained using acceptable vegetation sampling techniques on reference areas or range sites or adequate justification given why this rate will benefit postmining land-use. Please discuss the rationale for choosing this rate.

The type of mulch to be used for final reclamation must be specified.

UMC 817.122 Subsidence Control: Public Notice

The applicant must describe the information to be given in the public notice as required by UMC 817.122.

UMC 817.124 Subsidence Control: Surface Owner Protection

The applicant must provide specific mitigation plans for subsidence induced material damage to the surface as required by UMC 817.124.

UMC 817.131 Cessation of Operations: Temporary

The applicant must include a statement in the MRP that commits to submitting the information required under this section.

UMC 817.153 Roads: Class I: Drainage

The plan states that erosion protection will be provided in areas where velocities exceed five fpp. This should be clearly shown on Plate 3-5. Culvert locations for the mine portal access road need to be shown on Plate 3-5.

When will the two proposed 30 inch CMP culverts be installed on the Bear Canyon road? This should be stated in the MRP. Are they already installed?

UMC 817.156 Roads: Restoration

There are contradictions between the Appendix 3-G and the narrative. Please clarify.

How will the natural drainages be restored? How will the road surfacing be disposed?

0100R